tologically very distinct, inasmuch as the former is of marine origin, while the latter, so far as is now known, contains only brackish-water and fresh-water invertebrate forms. He reports a similar obscurity or absence of a stratigraphical plane of demarcation between the Laramic and Wasatch groups, although it is there that the final change from brackish to entirely fresh waters took place over that great region. Furthermore, he finds that while the three principal groups of the fresh-water tertiary series, west of the Rocky Mountains, namely, the Wasatch, Green River, and Bridger groups, have each peculiar characteristics, and are recognisable with satisfactory distinctness as general divisions, they really constitute a continuous series of strata, not separated by sharply-defined planes of demarcation, either stratigraphical or palæontological.

During the progress of the field work, as above indicated, large and very valuable collections of fossils have been made, all of which will constitute standards of reference in the future progress of the work, and quite a large number of the species are new to science. These are now being investigated, and will be published in the usual palæontological reports of the survey.

NOTES

At the moment of going to press we have received the report of the *Inflexible* Committee. The impression a first glance over it gives is that the *Inflexible* is a passable ship, but that the Committee strongly urge the Admiralty not to proceed with any more like it, which practically puts an end, we presume, to the *Ajax* and *Agamemnon*, in their present form, as well as to the fourth ship which the Admiralty proposed to build. It is proper, however, to state that a closer perusal of the report shows the *Inflexible* herself to be open to the gravest objections in several respects, and that the Committee recommend considerable modifications in her. In our next number we shall fully review the report.

We have received several letters from India, showing that great interest is being taken in that country with reference to the best methods of determining the amount and variation of solar radiation. We may state that both Prof. Stewart and Mr. Lockyer have recently devised instruments to secure these data. The latter proposes to utilise Capt. Abney's method of obtaining photographs of the red end of the spectrum, so that variations in thermal and chemical intensity may both be recorded automatically.

Sir William Thomson has been elected a Foreign Associate of the Paris Academy of Sciences, to fill the place vacated by the death of von Baer.

Prof. Sir Wyville Thomson has been created a Knight of the Royal Order of the Polar Star by the King of Sweden.

M. Tempel is to continue henceforth the publication of Donati's *Bollettino* of the Arcetri Observatory, of which only one number had been issued when Mr. Donati died.

Gen. Nansouty, Director of the Observatory situated on the top of the Pic du Midi has been nominated "Officier de l'Université" by M. Faye, the new Minister of Public Instruction. The General, as our readers know, spends his winters on that precipitous mountain for meteorological observations. We are glad to register such an acknowledgment of his devotion to science.

Dr. Burdon-Sanderson gives notice that the first of his annual course of lectures on comparative pathology will be delivered at the University of London, Burlington Gardens, on Saturday, December 15, at half-past five o'clock. The subject of the lecture will be, "The Infective Processes of Disease." The succeeding lectures will be on the Monday, Wednesday, and Friday of the following week, at the same hour, for which days "The Nature and Causes of Septic Infection," "The Germ Theory," and "The Theory of Contagium Vivum," are among the topics to be discussed.

The German postal department has issued a complete series of regulations for the use of the telephone in the various offices where it has been established. In § 15 we notice the rule that the speaker shall pronounce each syllable slowly and separately, and make a pause at the end of every six words to give time for the receipt of the message. The receiver repeats the whole message at the end at an ordinary rate of delivery. Proper names and foreign messages are spelled. The Postmaster-General, Dr. Stephan, who wages an unmerciful war in his department against all foreign words where a German equivalent is possible, has christened the new invention as the *Fernsprecher* (far-speaker), and excluded entirely the Greek *telephone* from his regulations.

In consequence of the large numbers who were unable to obtain admission to the recent lecture at the Society of Arts on the "Telephone," Prof. Bell, at the special request of the Council of the Society, has consented to repeat his lecture on Wednesday, the 19th inst. As there is certain to be a large attendance, it is suggested that those members who heard the first lecture, should refrain from exercising their privilege of being present on the second occasion.

Prof. Kekulé, of Bonn, the originator of the present benzene theory has been nominated for president of the German Chemical Society for the coming year. The policy which the society adopted at its last annual election of choosing its chief officer from among the leading German chemists at a distance from the headquarters of the society, seems to meet general favour, and Prof. Wöhler, the Nestor of organic chemistry, will certainly be ably succeeded by Prof. Kekulé, whose classical researches and theoretical deductions form the basis of the present atomistic theory. The German Chemical Society would do well to copy one of the customs of its sister society in London, viz., to require an inaugural address from its newly-elected presidents. We notice that the library of the society will be enriched by the bequest of the extensive chemical library of the late Prof. Oppenheim, an accession which will double the present number of volumes.

Dr. Vohl, of Cologne, has adopted an ingenious method of determining the impurities in the Rhine, which consists in analysing the boiler incrustations of the river steamers, as well as the concentrated residues remaining in the boilers after passing over a certain distance. By this means he has detected the presence of a large amount of arsenious acid in the river water—resulting chiefly from the aniline and dyeing establishments—as well as other poisonous substances. An unusually high percentage of phosphoric acid showed that the sea was daily absorbing vast quantities of the most valuable fertilising material from the soil of Germany.

The Scientific Congress of France will meet at Nice from January 10 to 20, 1878. The locality is likely to attract many visitors at such a cold period of the year.

Another sitting of the enlarged Council of the Observatory of Paris was held on December 9. The councillors passed a resolution for an increase of the salary of the astronomers and auxiliary astronomers, the maximum pay of the former to be 10,000 francs instead of 8,000, and of the second 7,000 instead of 6,000. They propose to the Government to place the appointment of the director of the establishment partly in the hands of the Academy of Sciences and partly in the hands of the Council, the Minister to have only the privilege to choose between both presentations. It should be remembered that under the former organisation the appointment of the director was in the hands of the Bureau des Longitudes, which had to designate yearly their member to preside over the observations. Arago and his illustrious predecessor held their office by a yearly tenure, renewed up to the time of their death. It was only Leverrier who was appointed by the Government; under the old monarchy the director was appointed by the king. A proposal was made for suppressing the general assembly of astronomers, which was established by M. Leverrier, and is to be held at Easter at the Ministry of Public Instruction. The proposal was out-voted. At the next sitting the long-discussed organisation of meteorology will be introduced; the existing order of things continues to enjoy the support of the majority.

A TELEGRAM from Alexandria states that Capt. Burton has started from Suez for Moilah on a second expedition to Midia, accompanied by many Europeans and a large number of native workmen and troops. A dépôt will be formed at Moilah in the Gulf of Akaba, and the expedition will extend to the second range of mountains hitherto unexplored. Capt. Burton expects to discover a rich mineral country between the two ranges of mountains. He will be absent four months.

THE Montsouris Park, in the centre of which the Montsouris Observatory has been erected, is almost ready for public use. Admittance to the observatory grounds will be procured on application to the secretary, for the purpose of inspecting the instruments and the working of the meteorological observations.

IN Würtemberg a remarkable property of ripe grapes has been recently discovered, which the agricultural authorities have now published, so that all proprietors of vineyards may derive benefit from being acquainted with it. It appears that if ripe grapes, which have become frost-bitten, are kept for a little time in some dry place, they entirely lose the bad effects caused by the frost.

IN the *Bulletin* of the French Geographical Society for October are some interesting notes from the Abbé Desgodins, on Tibet. The Abbé gives some information concerning the Brahmapootra, which he obtained from an old lama, whom he believes to be thoroughly trustworthy. This lama has travelled much, and visited nearly the whole of Tibet. His information goes to prove the identity of the Yar-tsiou-tsang-po with the Brahmapootra. He has followed the great river from its source in or near the lakes of Tso-ma-pang in the west of the province of Ngaré, the most western of Tibet, and in making his pilgrimages he has reached the frontiers of the savage tribe of the Lhopa. The lama states that some days to the east of Lassa the river turns towards the south, making a great bend, and traverses the well-peopled and rich district of Hia-zul, just to the north of the Lhopa. Passing through the latter district, it flows among steep and rugged rocks, and after a certain distance forms a great waterfall. This fall of the Yar-kiou-tsang-po, M. Desgodins has no doubt, is identical with the fall of Brama-Khoond, well known to the Assamese. The lama affirmed that the river did not reach so far as the Nahengs (Mishmis), but that it disappeared more to the west, among the Lhopa. The lama gave the Abbé, besides, much information concerning the people and the districts through which the river passes. The *Bulletin* contains, besides, a learned article by M. E. Cortambert on some of the geographical monuments of the middle ages in the National Library, dwelling at considerable length on the well-known Mappemonde of Beatus, a beautiful facsimile of which is given.

THE Italian Geographical Society has received letters from Aden dated November 25, which confirm the arrival of the second Italian (Martini-Cecchi) expedition at Farré. There is no news at all about the supposed defeat of King Menelik of Schoa in connection with which the death of the Marquis Antinori was reported. It seems, however, that King Kassa gained a victory over a Prince Menelik (son of the late King Theodor), who had rebelled in Kassa's camp. The resemblance of names explains the misunderstanding and deprives of any foundation the news about the misfortune said to have happened to the members of the first Italian (Antinori) expedition.

THE French Acclimatisation Society held its anniversary meeting on December 7 last, under the presidency of M. Quatrefages. The Society lost recently M. Drouyn de Lhuys, one of its founders, a former minister of the empire, well known in France as well as abroad.

IN this month's *Geographical Magazine* Mr. C. R. Markham continues his valuable papers on Irrigation in Southern India, and Mr. G. J. Morrison concludes his interesting description of the island of Formosa. In criticising Mr. Trelawney Saunders on the question of "Water-partings *versus* Ranges," Mr. R. B. Shaw appears to have misconceived Mr. Saunders' statements; Mr. Saunders' knowledge is too extensive and accurate to allow him to maintain the identity of the two terms. Sir George Nares contributes an important article on the Greenland Foehn, recently noticed in NATURE.

WE are glad to learn from the *Geographical Magazine* that the Dutch are making active preparations to resume Arctic exploration, to which they have been able to do little since the days of the brave but unfortunate Barentz, and nothing at all, we believe, during the last century. A new schooner is to be built to be sent out in May next year to make a summer cruise in the Spitzbergen and Barentz Seas.

THE hygrometer devised by M. Alluard, described in NATURE, vol. xvii. p. 14, was constructed by M. L. Golaz, of 24, Rue des Fosses St. Jacques, Paris, who contributed some beautifully-constructed apparatus to the recent Loan Collection at South Kensington.

DR. SCHLIEMANN, assisted by Mr. Streatfield, of the Science and Art Department, is busy arranging his Trojan treasures in the South Kensington Museum. Although a large space has been assigned for their reception, it will take considerable ingenuity to get all the interesting articles satisfactorily arranged.

M. DAHLANDER communicates to the Swedish Academy of Sciences the results of his observations on the comparative rapidity with which heated solid bodies are cooled by immersion in various liquids. If the cooling power of water be taken as unity, that of alcohol is 0·58, of mercury 2·07, of a concentrated solution of salt, 1·05, and of a concentrated solution of sulphate of copper, 1·03. The rapidity of the cooling increases with the increased temperature of the liquid.

THE twenty-first annual report of the committee of the Free Public Libraries and Museums of Sheffield, speaks favourably of the progress of these institutions. We are glad to see that the number of scientific works sought for both in the lending and consulting libraries bears a fair proportion to the number in other departments.

ACCORDING to the published reports of the Koenigsberg Board of Trade, the total production of amber in the province of Prussia amounted to 135 tons during the year 1876, of which eighty-five tons were furnished by one mine alone, viz., the mine of Palmnicken. This production considerably exceeded that of the previous year. The amber was exported principally to Austria, France, Russia, America, China, and Japan, while the export to India, Persia, and Australia does not pay the producers, and is therefore extremely limited. The number of workmen in the province who are employed in the production of amber amounts to nearly 1,400.

NOW that the struggle in the East seems to be reaching its crisis, the fine, large, clear map of the Bosphorus and the

Dardanelles, just published by Mr. Stanford, will be extremely useful to those who desire to follow, with intelligence, further movements, military or diplomatic.

MR. HEIGHWAY'S handbook of "Practical Portrait Photography" (London, Piper and Carter), has reached a second edition, into which some improvements have been introduced.

THE death is announced of Mr. John G. Anthony, who for some years has had charge of the conchological department of the Cambridge Museum. He was one of the party accompanying Prof. Agassiz in his celebrated scientific expedition to Brazil.

THE number of French communes receiving the daily warnings of the international service for agricultural purposes is increasing daily; the death of Leverrier has not destroyed that extraordinary movement. It is said the twenty districts into which Paris has been divided, will very soon have the daily warnings posted at each of their respective mairies. According to a saying attributed to M. Dumas, ' The existing meteorology had had its own plebiscitum."

PROF. J. PLATEAU, of Ghent, has reprinted (from the *Proceedings* of the French Association for the Advancement of Science, 1876) a paper on the question, Is the instinct of insects deceived by artificial flowers? As far as the series of experiments performed by him—rather few in number, but apparently carried out with great care—can be relied on, although insects may be attracted from a distance by the bright colours of artificial flowers, they are never tempted by the resemblance to alight on them in the hope of obtaining food from them. He concludes, therefore, that insects make use of some other organ than that of sight in the selection of the flowers which they visit.

PROF. E. MORREN, of Liége, has issued the fifth annual edition of his "Correspondance Botanique," which contains a complete list of botanical gardens and museums, and the occupants of botanical chairs throughout the world. Even adding a number of "unattached" English botanists whose names are given, it is instructive to compare the number engaged in botanical research in Great Britain with that in France or Germany, or even in Italy or Russia.

A BRIEF report of the third annual conference of the Cryptogamic Society of Scotland, held at Dunkeld in October last, has been published, from which it is evident the meeting was successful. The first fasciculus of the "Fungi Scotici Exsiccati" will be published in January. Dr. Buchanan White, Perth, will receive orders; no subscribers names can be received after the 20th inst.

WE have received Part 2, 1876–77, of the *Transactions* of the Cumberland Association of Literature and Science, which contains a number of scientific papers of considerable value. Among these are six original papers communicated to the societies connected with the Association during the session, and selected by the Council for publication. Two of these will interest the scientific reader: "Jonathan Otley, the Geologist and Guide," by Mr. Clifton Ward, and "Notes on the Migratory Birds of the English Lake District," by Mr. John Birkett.

THE seventh annual report of the Leeds Naturalists' Club and Scientific Association speaks in the most favourable terms of the continued progress of that society.

IN the *Monatsbericht* of the Prussian Academy of Sciences for July, which has just appeared, we notice papers by H. Anvers, "On the Results of the Transit Observations with Bradley's Quadrant;" by H. Websky, "On the Horn-Mercury from el Doctor in Mexico;" by Prof. du Bois Reymond, Prof. Peters, and Prof. Möbius, "On the Amphibious Collections made by Dr. Sachs during his late trip to Venezuela."

IN the *Atti della Reale Academia dei Lincei* at Rome, some interesting investigations are described, which were made by Messrs. A. and G. De Negri at the Chemical Laboratory of the Genoa University, on the purple dies of antiquity. The authors have thoroughly investigated the subject; after an elaborate account and an enumeration of the various historical data with regard to the molluscs from which the ancients obtained their purple colours, they enter into a discussion of the chemical and optical properties of these substances, the methods of dyeing with them, the adulterations found in them, and various other details concerning them. We must refer our readers to the original treatise for further particulars, as our space will not permit us to enter into them. The paper is accompanied by a number of plates, giving the spectra of the colours obtained from species of the genera *Applysia* and *Murex*. The same volume of this publication contains an excellent account, by Signor C. Bagnis, of the fungi species *Puccinia*, illustrated by no less than eleven well-drawn plates.

THE Piscicultural Institution of Schwerin has recently made some important experiments with a view to ascertain whether the artificial culture of river Crawfish (*Astacus fluviatilis*) is possible on a large scale. The experiments were entirely successful. In the spring of last year some 700 crawfish with ova were placed into two circular ponds of only six feet diameter, and for each animal a separate hole had been constructed. At the end of November the ponds were drained in order to separate the young crawfish from the old ones. It appeared that of the latter only three or four were crawling about at the bottom of the pond while all the others had occupied their respective dwellings. The young were of the size of a bee and extremely lively; they were taken out of the ponds and already on the following day could be fed artificially with carrots and meat. Many a land or garden proprietor could thus make crawfish-culture a lucrative pastime at very little cost, particularly since the consumption of these crustaceans increases largely every year.

THE last number of the *Zeitschrift für Ethnologie* contains a most valuable and elaborate review of the entire ethnological and anthropological literature of 1876, prepared by Prof. W. Koner. Over 1,000 pamphlets, periodicals, and books are referred to, and as few subjects are handled in a greater variety of languages than those in question, the labour of compiling such a report can easily be imagined.

WE have received the third (final) part of Herr Axel Blytt's elaborate Flora of Norway, which is published by order of the Royal Norwegian Society of Sciences, and bears the title, "Norges Flora; eller Beskrivelser af de i Norge vildtvoxende Karplanter" ("Flora of Norway; or, Description of the Wild Plants in Norway.")

A CORRESPONDENT asks where he can find a description of the mode of drying sections of trees. He has a transverse section, three inches thick, of an elm tree, and he wants to dry it so that it may be cut in veneer when ready.

THE additions to the Zoological Society's Gardens during the past week include a Diana Monkey (*Cercopithecus diana*) from West Africa, presented by Mr. Walter Mayhew; a Rhesus Monkey (*Macacus erythræus*) from India, presented by Mr. R. S. Cox; two White Storks (*Ciconia alba*), a Common Heron (*Ardea cinerea*), a Greater Black-backed Gull (*Larus marinus*), European, presented by Mr. C. Clifton; a Hobby (*Hypotriorchis subbuteo*), captured at sea, presented by Mr. W. Renney; two Lesser Sulphur-crested Cockatoos (*Cacatua sulphurea*) from the Moluccas, presented by Mrs. Roberts; seven Gelada Baboons (*Cynocephalus gelada*) from Abyssinia, four Barbary Turtle-Doves (*Turtur risorius*) from North Africa, deposited; two Schlegel's Doves (*Chalcopelia puella*) from West Africa, purchased.